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MCZ newsletter
MUSEUM OF COMPARATIVE ZOOLOGY

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PROFESSOR FRANK M. CARPENTER RETIRES

The MCZ and Harvard's Department of Biology would be considerably different today had Professor Frank M. Carpenter not spent the last 51 years here in various, always vigorous, capacities. Professor Carpenter's energetic influence has pervaded practically every aspect of the life of the local biological community and beyond since he entered as a freshman in 1922 (A.B. 1926, S.M. 1927, D.Sc. 1929 in Entomology).

Fossil Insect Collections

While still a graduate student, Professor Carpenter was employed by Director Thomas Barbour to sort out the vast fossil insect collection left to the MCZ by Samuel H. Scudder upon his death; the Curator of Entomology at the time (Nathan Banks) had no interest in this collection and it was stashed away in inaccessible drawers in the far reaches of the Department. The job turned out to be more rewarding than anyone could have expected — the collection was the largest in existence, including some 40,000 specimens mostly from Tertiary deposits (about 70 million years ago) in Europe and North America.

Upon completing a three-year postdoctoral fellowship (he studied the Permian insects of Kansas) Professor Carpenter was appointed Assistant Curator (1931) and became the Curator of Fossil Insects in 1936 — a position he has occupied ever since.

Professor Frank M. Carpenter upon his retirement last June holding the only completely preserved fossil butterfly found to date. This is part of the Scudder collection and one of the MCZ's proudest possessions. The specimen, Prodryas persephone *(found in 1878), was sent to Samuel Scudder, a student of Louis Agassiz and a butterfly specialist. It aroused his interest in fossil butterflies and inspired a chapter on this subject in his book,* Frail Children of the Air. *This in turn stimulated the young Frank Carpenter to such an extent that he combined his two previous loves – fossils (he was victim to the common childhood infatuation with dinosaurs) and butterflies – and came up with one of his life-long research interests.*

The Entomological Staff of the MCZ in 1929-30 (and some local entomologists). This was the first year that Professor Carpenter held a Harvard appointment, as a National Research Council Postdoctoral Fellow. Front row (l. to r.): Charles W. Johnson, Nathan Banks, Elizabeth Bryant, Joseph C. Bequaert. Back row (l. to r.): Albert P. Morse, Arthur Loveridge, Charles T. Brues, E.T. Learned, Samuel E. Cassino, Frank M. Carpenter. (Professor W.M. Wheeler was not included in the photograph because he was absent from Cambridge at the time.)

Research

How Frank Carpenter came to devote his life to the study of fossil insects makes an interesting tale. His earliest childhood memories include insect collecting excursions with his father and the interest grew throughout his boyhood. He used to send away for entomological literature and specimens and these attracted the attention of the postman who delivered the mail to his Melrose, Mass. home. The postman inquired as to who in the family was the insect collector and thus began an intense and profitable friendship since it turned out that the postman, F.W. Dodge, was an ardent amateur coleopterist (beetles). He invited the 16-year-old Frank to come along to a meeting of the Cambridge Entomological Club which used to meet at the Bussey Institution, then a Harvard graduate school located at the Arnold Arboretum. To a boy who had pursued his hobby with only one colleague up to that point, the experience of being in a room full of people working on insects was dazzling. He met Professors William M. Wheeler and Charles T. Brues of Harvard on this occasion and the former took a great interest in him, strongly encouraged him to apply to Harvard, and gave him a thick book on fossil insects. Of course, the young Frank followed his advice, took the courses taught by Professors Wheeler and Brues, and subsequently taught them himself for 28 years.

Professor Carpenter's research on the comparative structure of living and extinct insects has helped to reconstruct the past 250 million years of insect life but his main emphasis has been on Permian insects. He has also concentrated on applying new techniques of study to previously described specimens and says of this work: "The re-study of this 'old' material has contributed as much to our understanding of insect evolution as investigations on recently collected specimens." Professor Carpenter has written 130 papers on insect evolution and is the co-author of *The Classification of Insects*, an imposing tome that describes the families of insects of the world.

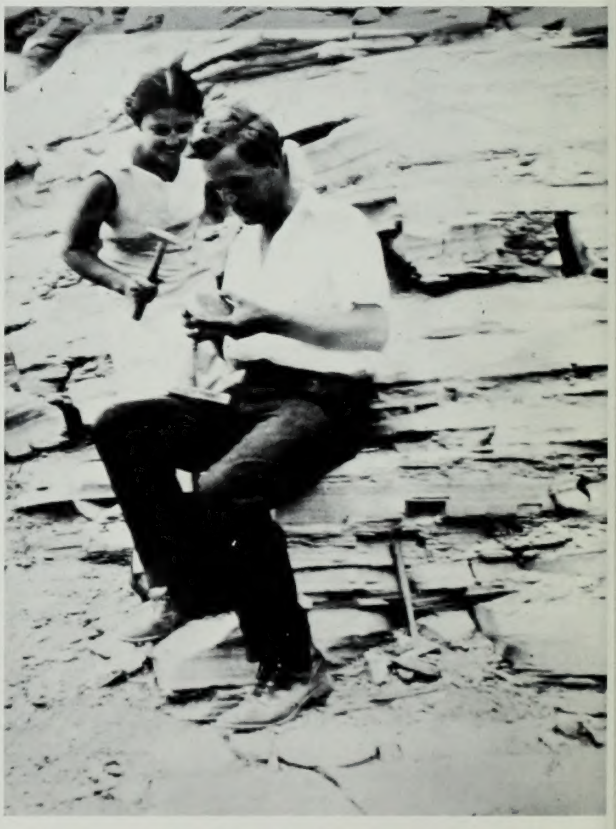
Teaching and Administration

Appointed Instructor of Zoology in 1935 and Assistant Professor the following year, Professor Carpenter has devoted enormous energy to his teaching commitments. He became Associate Professor in 1939 and, following the retirement of Professor Brues in 1945, became Professor of Entomology and Alexander Agassiz Professor of Zoology; in 1969 he was appointed the Fisher Professor of Natural History. Each year since 1945 he has given two half courses, one on the biology of insects and the other on their evolution and classification. He has had a total of 31 graduate students who are now scattered all over the world. Three that are still close to home are Professor Edward O. Wilson (Harvard) and Professors Thomas Eisner and W.L. Brown (both at Cornell). Professor Carpenter has also been very active in the Harvard Extension program, teaching general zoology and insect biology for the past 34 years. He finds teaching Extension students especially rewarding; they are obviously highly motivated or they wouldn't make the effort to attend a class on insects after working a full day.

The Department of Biology and the entire University have also benefitted from Professor Carpenter's active dedication. He was Chairman of the Department from 1952-1959, Acting Associate Dean of the Graduate School of Arts and Sciences in 1946, Acting Director of the University Extension for three different years, and from 1965-1973 was the Chairman of the Evolutionary Biology Training Grant Committee.

Professor Carpenter has been the Editor of *Psyche*, the journal of the Cambridge Entomological Club, for 26 years and has also hosted the entomological teas for many years.

Now that he has retired, Professor Carpenter plans to continue his research on fossil insects in order to complete work in progress and bring the catalogue of the collection up-to-date.



Professor and Mrs. (Ruth) Carpenter hunting for fossil insects in the Green River (Eocene) shales, Watson, Utah, July 1935.

TWO NEW ASSISTANT PROFESSORS OF BIOLOGY

Insects

Dr. Robert E. Silberglied, a recent Harvard Ph.D. and newly appointed Assistant Professor of Biology, is interested in how insects communicate with one another. By photographing specimens with two cameras simultaneously, one recording the human visual impression and the other the ultra-violet component, he is able to compare what we see with what insects see. Some butterflies, for example, have on their wings ultra-violet reflection patterns, invisible to us, but which the butterflies see and use to tell sexes and species apart. This "private" visual language enables them to use the remainder of the spectrum, visible to vertebrates, for communication with predatory birds, mimicry, and thermoregulation. Dr. Silberglied developed these techniques with Dr. T. Eisner of Cornell (where he received his M.S. in 1969). He has also studied the ultra-violet reflection patterns on many flowers whose elaborate signals compete for the attention of pollinating insects.

The other half of Dr. Silberglied's research is centered in the Galapagos Islands where he spent six months in 1970 and where he returns as frequently as he can manage it. The isolation of the area contributes to the unique flora and fauna of these islands. For example, there is only one species of bee, and about 100 species of flowers compete for its attention.

Dr. Silberglied has inherited the Biology of Insects course from Dr. Carpenter and he also plans to continue the Wednesday afternoon teas. He will occupy a newly-renovated area on the fourth floor of the MCZ which provides him with the dark room facilities necessary for his work.

Dr. Silberglied with his double-eyed camera equipment poised to shoot a specimen.

Marine Invertebrates

During the summer, Dr. Robert M. Woollacott moved to the fifth floor of the MCZ Labs to assume his new position as Assistant Professor of Biology and Assistant Curator of Marine Invertebrates. Dr. Woollacott will teach Biology 123 (Comparative Analysis of Invertebrate Development), continue his research on the reproductive biology of marine invertebrates (especially of lophophorates) and, with Dr. Herbert W. Levi, take care of the presently rather scattered collections of marine invertebrates which include starfish, sea urchins, sea anemones, jellyfish and corals, among other things.

A native of California, Dr. Woollacott received his Ph.D. degree at the University of Southern California in 1970 and thereafter undertook postdoctoral studies with Dr. Russel L. Zimmer at the Santa Catalina Marine Biological Laboratory followed by a year with Dr. Richard M. Eakin at the University of California at Berkeley. Dr. Woollacott came to Harvard in the Fall of 1972 as Director of the Electron Microscope Facility in the Biological Laboratories and Lecturer on Biology.

MCZ LABS ARE OFFICIALLY OPENED

The first new addition to the MCZ in 84 years was celebrated with intellectual and gustatory brilliance on May 29 and 30. The special events marking the occasion included a Dedication Ceremony, a Symposium on Evolutionary Biology, a tour of the new facilities at the Concord Field Station, a special exhibit of Agassiz memorabilia, and a dinner at which Professor Ernst Mayr was the speaker.

The Dedication Ceremony. Windswept under a tent in the parking lot, Director A.W. Crompton (at the microphone) praised the foresight of his predecessor, Professor Ernst Mayr, welcomed the prospect of a facility for experimental work in whole animal biology, and predicted that the effect would be to counteract the trend towards the polarization of those working on the biology of whole organisms and those working on the biology of cells. President Derek C. Bok (to his left) remarked on the strong influence of buildings on the development and direction of fields of inquiry and Professor Carroll M. Williams (to his left) added some nostalgic humor to the proceedings with his anecdotes on collections and Harvard.

Champagne in hand, the gathered well-wishers viewed a special exhibit of Agassiz memorabilia and toured the building following the Dedication Ceremony. Pictured below are (l. to r.) Professors A.S. Romer (former MCZ Director), C.M. Williams, E.O. Wilson, Dr. Shields Warren of the Cancer Research Institute, New England Deaconess Hospital, and Professor Kenneth D. Roeder from Tufts University.

The two-day Symposium on Evolutionary Biology included lectures by Professors R.D. Alexander, University of Michigan, N.G. Hairston, University of Michigan, G.L. Stebbins, University of California at Davis, R.C. Lewontin, Harvard, D.B. Wake, University of California at Berkeley, and M.H. Moynihan, Smithsonian Tropical Institute. Their talks and Professor Ernst Mayr's address will appear as separate MCZ publications as well as in a specially-bound commemorative volume.

Professor Ernst Mayr, speaking at the dinner, is obviously enjoying the occasion and (l. to r.) Mrs. Ann Crompton, David B. Stone (member of the governing board of the MCZ) and Mrs. Thomas D. Cabot share his mood.

Hunger wasn't a problem during the symposium. Here are (l. to r.) Prof. and Mrs. Joel E. Cohen (Harvard), Prof. Charles A. Meszoely (Northeastern Univ.), Dr. John R. Boreske, Jr. (MCZ), Prof. F.R. Parrington (Cambridge, England), Prof. Frederick E. Smith (Harvard), Prof. George E. Erickson (Brown Univ.), Robert Pisano (Boston Univ. undergraduate), a visitor unknown to the Editor, Junior Fellow Robert T. Bakker and Prof. Matthew S. Meselson (both of Harvard), Prof. Carl Gans (Univ. of Michigan), and Mrs. Ruth Romer helping themselves to lunch after one of the morning lectures.

PROBLEMS? TAKE THEM TO 201.

Parking stickers, grant budgets, clogged drains, distinguished visitors, keys, secretarial needs, broken doors, late paycheck, no paycheck . . . you name it, if it happens at the MCZ it'll end up with the experts in (and around) Room 201.

Gala events, like the recent opening, are (mercifully, from an administrative point-of-view) rare and elicit the assistance and cooperation of the entire MCZ staff; however, the Museum's normal healthy functioning (naturally taken for granted), would be impossible without such people as Mrs. Marjorie K. Sturm, Mrs. Norma L. Linn, and Mr. Charles Atlas.

Mrs. Sturm came to Harvard in 1959 and has been indispensable to the smooth running of the MCZ under three directors. Her yearly cycle includes a two-month period of fiscal frenzy when she hides in the Agassiz Room surrounded by computer sheets. Her emergence from this ordeal, completed budget in hand, is always greeted by a Museum-wide sigh of relief, as she again turns her full attention to her many other responsibilities.

A mathematics major in college, Mrs. Norma L. Linn has been Mrs. Sturm's assistant since 1969. Somehow, although her job keeps her very busy paying all the Museum's many bills, she always manages to find the time to enjoy herself, on the job and off. SCUBA diving and underwater photography are among her most recent passions.

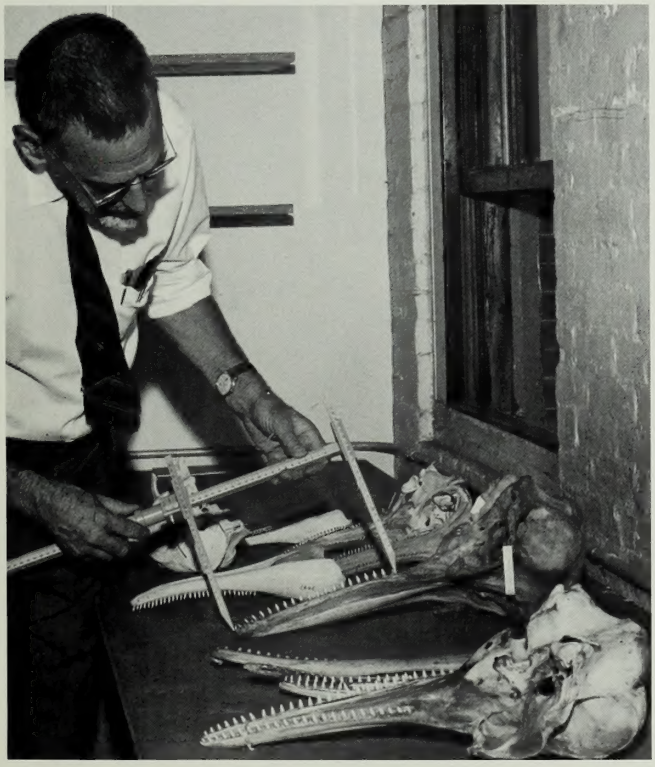
"Ask Charlie!" is probably one of the most often-repeated phrases heard around the Museum. Charles Atlas, Museum Building Technician, who has been looking after the "old" MCZ since 1960 and now also includes the MCZ Labs in his care, can do everything (at least when it comes to carpentry and general repairs). He has not always shared this widely-held faith in his abilities and recently surprised himself by wiring and installing a rather complex intercom system which involved matching up many wires of different colors. He only revealed after the system was functioning successfully that he is color-blind!

Robert Frost said: "Home is the place where, when you have to go there, / They have to take you in."
The same could be said of MCZ Room 201.

WILLIAM E. SCHEVILL RETIRES

"Why study the vocal sounds made by whales? For a curiosity-powered, or 'pure,' scientist this is not too difficult a question to answer: 'Because they are neither well-known nor understood, — and happen to have caught my attention.'" This is how William E. Schevill, who retired as Research Associate in Zoology on June 30, 1973, introduced an article on his phonograph recording of whale and porpoise noises in the December 1962 issue of *Oceanus* (Woods Hole Oceanographic Institution) and this subject still has a firm grip on his attention. Mr. Schevill's fascination with every aspect of the life of cetaceans (whales and porpoises) began when he first found his underwater legs during World War II by spending many months sounding out enemy submarines for the Navy. Since then he has hovered over and traveled under (infinitely better than sitting on the surface because a: you don't get seasick, and b: you can hear much better) the oceans from the sub-Arctic to the Antarctic. He has conducted experiments to discover whether cetaceans use echo sounding to find their way around the murky, low-visibility waters (they do), has attempted to trace their migration patterns with radio-tagging (results are not yet in), and generally has tried to learn how, as Mr. Schevill puts it, "They make a living in the water." In an effort to understand the source of the whales' sounds, Mr. Schevill and his wife, Miss Barbara Lawrence, Curator of Mammals, have dissected recently dead specimens. When one considers the size of both whales and the oceans they inhabit, one can begin to appreciate the amount of energy and perseverance that this line of research requires.

When Mr. Schevill first arrived at the MCZ as a Harvard undergraduate in 1928 he worked in the Department of Paleontology sorting fossils. In 1931 he became Assistant Curator of Invertebrate Paleontology and collected in such far-flung localities as Australia, northern Europe, North and South America, and the Antarctic as well as maintaining the invertebrate collections. In 1935 he began to also give some time to the MCZ Library and added "Associate Librarian" to his title. From 1937-1943 he was the MCZ's Librarian as well as Associate Curator of Invertebrate Paleontology. Upon his return from the war, Mr. Schevill concentrated his full attention on cetaceans and became Research Associate in Zoology. "The MCZ is fine for books and bones," Mr. Schevill explains, "but I now needed sea time and underwater sound gear." Accordingly, he became associated with the Woods Hole Oceanographic Institution in 1946 and has made good use of the facilities both institutions could provide since that time. As Associate in Mammalogy, he plans to continue his investigations into the life of cetaceans.



William E. Schevill measuring skull proportions of a porpoise (Steno) *from the Indian Ocean.*

FAREWELL . . .

Alexander Agassiz Professor Howard E. Evans has left congested Cambridge for the wide open spaces of Colorado where he will assume a professorial position at Colorado State University at Fort Collins.

SEMINAR IN ANIMAL MECHANICS HELD AT THE CONCORD FIELD STATION

Professors R. MacNeil Alexander (University of Leeds) and Giovanni Cavagna (University of Milan) traveled to the Concord Field Station for the week of September 17-21 to take part in a lively session on animal mechanics. Local speakers included Professors Thomas A. MacMahon (Applied Mechanics), Eric L. Radin (Orthopedic Surgery) and Karel F. Liem (Ichthyology) and many interested faculty members and students took part in the general discussion which covered such topics as: stresses in muscles, bones, tendons, and joints; energy requirements for locomotion; and mechanics of the head and adaptive radiation of head structure.

IN THE FIELD

There's fossils in them thar hills and Chuck Schaff (front left) and his Argentinian co-workers were there to find them last May.

To the paleontologist the past is a three-dimensional jig-saw puzzle with the pieces waiting to be discovered in the rocks and fitted together. He can speculate to within a reasonable degree of accuracy where a particular fossil might be found but actually finding it is always an exhilarating event, making worthwhile the preceding, often frustrating, search.

For Charles Schaff, Curatorial Associate in Vertebrate Paleontology, last May's journey to the Ischigualasto Valley, Argentina was not in vain — he managed to add a front end to a beast who hitherto had only been known by his hind quarters. In collaboration with Dr. William D. Sill, Head of the Department of Paleontology at the National University of Cuyo in San Juan, Argentina, and as part of A.W. Crompton's ongoing project to piece together who was alive and what they were doing 225 million years ago, Chuck was searching for material that was slightly younger than that found by Professor A.S. Romer in this region. As often happens, he didn't find what he was looking for but did find a skull and part of the postcranial skeleton of *Herrerasaurus*, a dinosaur whose rear half had been found by Señor Herrera, a man of the mountain region who accompanied Professors Romer and Patterson into this desolate area in the 1950's and who had a fine eye for fossil spotting.

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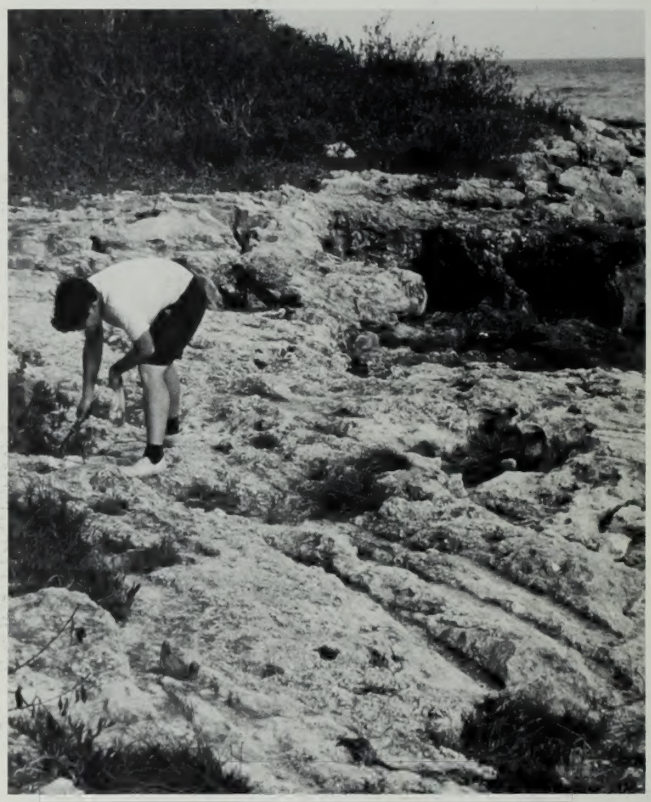
Stephen J. Gould, Professor of Geology and Curator of Invertebrate Paleontology, is studying the evolution of one of the most variable groups of land snails known. These snails, members of the genus *Cerion*, are common in the Bahamas and their diversity of form is such that nearly 500 species were described by earlier workers. In his re-analysis of the situation, Dr. Gould is employing techniques of multivariate analysis to elucidate the complex patterns of growth and form in natural populations. Collaborating with Dr. Woodruff, he has extended his study to consider the population genetics and ecology of the modern forms. Although his work promises to considerably simplify the taxonomic confusion, it has uncovered numerous fascinating problems of the evolutionary aspects of growth and form, biogeography, and ecology.



Professor Gould collecting fossil corals on New Providence Island.

YOU *CAN* GET THERE FROM HERE . . .

There is welcome news this month for carless students who are carrying on research projects in the bunkers at the Concord Field Station. The gap between Cambridge and Concord has been bridged by a shuttle bus which is scheduled to make the round trip twice daily during the academic year.